Optimization is not only a major segment of applied mathematics, it is also a critical problem in many engineering and economic fields. In any situation where resources are limited, decision makers try to solve problems they face in the best possible manner. The course provides theory and practice.

Content
The class will cover topics such as:
- Convex sets and functions
- Recognizing convex optimization problems
- Optimality Conditions and Duality
- Linear Programming (geometry of linear programming, applications in network optimization, the simplex method)
- Least squares and quadratic programs
- Semidefinite programming
- Interior point methods

Keywords
Convex Optimisation

Learning Prerequisites
Required courses
A good background in linear algebra. Mastering MATLAB is a plus!

Recommended courses
Basic Linear Algebra

Learning Outcomes
By the end of the course, the student must be able to:
- Solve Convex optimization problems

Teaching methods
Ex-cathedra lectures and exercise sessions (in English).

Assessment methods
Midterm (25%) and final exam (50%). Small personal project (25%). Exams are open-text and on paper (no use of computers)

Resources

Bibliography

Book: Convex Optimization by Stephen Boyd and Lieven Vandenberghe

Ressources en bibliothèque

- Convex Optimization / Boyd